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Inflation

Aiming Low:

Canada's New Inflation Targets

by

William B.P. Robson

At the time of the February 1991 federal budget, the governor of the Bank of Canada and the minister of Finance announced a set of inflation targets, according to which the annual increase in the (somewhat modified) CPI is to fall to 3 percent by December 1992 and to 2 percent by December 1995. Price stability, tentatively identified as a rate of CPI inflation clearly less than 2, is to be achieved in the second half of the 1990s.

These targets are welcome for the sharper definition they give to the Bank's strategy for eliminating inflation, and for their indication of a commonality of purpose between the Bank and the federal government. To the extent that they reduce inflationary expectations among individuals and businesses — which depends, in part, on their credibility — they can be expected to reduce the pain of disinflation.

The December 1992 target appears credible: the disinflationary thrust of recent monetary policy has probably been sufficient to hit it without much additional downward pressure. Whether the longer-term targets will be hit is as much a political as an economic question, however, since the Bank will come under periodic pressure to run excessively expansionary policies.

Action in a number of areas would help to build on the next two years' progress in reducing inflation by cementing expectations of future price stability more firmly. The government and the Bank need to clarify the precise target index and the significance of the bands around it. If the 3 percent target is hit cleanly, accelerating the post-1992 approach to price stability would probably be useful. A durable regime of price stability may require targeting the *level* of the CPI, rather than its rate of increase. And ultimately only an amended *Bank of Canada Act* will give the Bank lasting protection from periodic pressure to run inflationary policies.

A Policy Innovation

Setting Inflation Targets

The release of the 1991 federal budget on February 26 was attended by a significant innovation in Canadian economic policy: the announcement of a series of inflation targets, set jointly by the minister of Finance and the governor of the Bank of Canada. The targets set out a downward path for inflation, as measured by a somewhat modified consumer price index (CPI), through to 1995, with a view to reaching price stability at some point in the second half of the decade.

The targets envisage a relatively rapid reduction in inflation over the next two years, followed by more gradual progress. Specifically, the year-over-year increase in the CPI is to be reduced to 3 percent by the end of 1992 — that is, in December 1992, the CPI is expected to be 3 percent higher than its level in December 1991 — to 2½ percent by June 1994, and to 2 percent by the end of 1995. A figure of 5 percent at the end of 1991 was mentioned as an "interim guidepost."

The eventual goal, price stability, is identified in a preliminary way as "a rate of increase in consumer prices that is clearly below 2 percent."[1] A precise definition of price stability and the target path to be followed in the second half of the 1990s in attaining it were set aside for future determination.

Evaluating Inflation Targets

This *Commentary* assesses the significance of explicit inflation targets in the quest for price stability. It begins by reviewing the worldwide change in thinking about the proper goals of monetary policy. Next, it canvasses the benefits that inflation targets may provide. It then turns to the "fine print" of the targets, to clarify both the nature of the goal and some of the obstacles. Finally, it asks whether the targets are likely to be hit.

Three major observations emerge from this review. First and foremost, the announcement of inflation targets gives sharper definition to the Bank of Canada's strategy for eliminating inflation. It thus enhances the accountability of both the federal government and the Bank for a key element of macroeconomic policy. For this reason, the targets are welcome.

Second, it is quite possible that the near-term target, 3 percent by December 1992, will be met without excessive resort to the fine print. The downward pressure on inflation that has been built into the Canadian economy by the tight monetary policy of the past three years may even be sufficient to exceed the target.

Finally, the likelihood that price stability will actually be achieved during the 1990s — which depends as much on political as on economic considerations — has been increased by the announcement of targets. However, given the Bank's ultimate subservience to the minister of Finance and the short-term political benefits of expansionary monetary policy, skepticism will persist. This matters, because the ability of targets to ease the path to price stability by lowering inflationary expectations depends on their credibility.

If the government and the Bank wish to bolster the credibility of their longer-term strategy further, a variety of means are available: clarifying the target index and the significance of the qualifications surrounding the targets; accelerating the post-1992 approach to "less than two" if the December 1992 target is hit cleanly; committing the government more clearly to complementary policies; and strengthening the Bank's legislated mandate to pursue price stability.

The Context

New Thinking about Central Banking

In making price stability the primary target of central bank policy, Canada is in step with recent thinking about the objectives of monetary policy around the world. In the 1930s and

1940s, when the basic legislation currently governing central banks in many of the major developed countries was implemented, economic circumstances and the weight of opinion among economists favored a number of objectives for monetary policy. In addition to — and sometimes instead of — maintaining the internal purchasing power of the currency, central banks were generally also required to maintain its external value — the foreign-exchange rate — and to promote high levels of output and employment.

The role of central banks in promoting economic activity was particularly prominent in people's minds at the time of the Bank of Canada's establishment in 1934. Inflation was then a remote threat — prices had fallen by about one-fifth over the previous four years, making deflation a far more serious concern — while a contraction of credit and money had played a pivotal role in bringing about the extraordinarily depressed output and high unemployment of the period.

Price Stability as the Primary Objective

During the past quarter century, economic circumstances and developments in economic theory have brought into sharper relief the difficulty — and ultimate impossibility — of pursuing multiple mandates with the limited tools at a central bank's disposal. In particular, the influence of monetary policy on "real" variables — specifically, the ability to stimulate output and employment through faster monetary expansion — is now generally considered to be transitory, and probably counterproductive in the long run. The principal legacy of loose monetary policy from the mid-1960s on was high inflation.

Inflation imposes a number of costs on the economy and on society. Many economists view as substantial the "deadweight" losses produced by efforts to avoid holding depreciating money, by efforts to profit from inflation through financial engineering, and by inflation's interference with the key role that price signals play in a market economy.[2] Inflation also has important and divisive distributional consequences: transferring wealth from creditors, taxpayers, and those on fixed incomes to debtors, governments, and those able — through financial adroitness or political clout — to protect themselves or benefit from its effects.

Whatever its source, the discontent that accompanies inflation is powerful enough that when inflation reaches some critical level, a majority begins to insist that something be done about it. The experience of most developed countries during the past 25 years has been periods of gradually rising inflation punctuated by sharp, painful disinflations. Large fluctuations in the inflation rate not only amplify the deadweight costs and distributional consequences of inflation, they also produce other costs — most notably alternating periods of overheating and unemployment in labor markets.[3]

This experience has led to growing recognition around the world — evident, for example, in the thinking about the mandate of a potential European central bank — that price stability is the appropriate primary objective of monetary policy.

Time Inconsistency in Monetary Policy

The choice of price stability as the primary objective, taking precedence over regulating economic growth or the exchange rate, is dictated by a problem of "time inconsistency". This problem arises from the fact that, while there is no — or even a negative — correlation between inflation and growth over the long term, easier monetary policy can usually provide short-term stimulus to the economy. Most voters would identify low or no inflation as an appropriate long-term goal. But most voters also prefer lower interest rates and faster growth tomorrow. If governments respond to the latter desire, low inflation in the long term is unattainable.[4] (So, in the long term, are the desired lower interest rates and faster growth.)

Box 1: *Inflation Targeting in New Zealand*

In March 1990, an agreement between the minister of Finance and the governor of the Reserve Bank of New Zealand specified that monetary policy would be directed toward achieving a year-over-year inflation rate of 0–2 percent by December 1992. This time frame was extended by one year in December 1990, following a change in government. In February 1991, the Reserve Bank of New Zealand announced interim targets of 2.5–4.5 percent by December 1991, 1.5–3.5 percent by December 1992, and 0–2 percent by December 1993.

New Zealand's strategy allows for deviations from the targets in addition to the 1 percent plus/minus band implied by the target ranges, in the event of increases in indirect taxes whose impact on the CPI exceeds one-half of a percentage point, dramatic terms-of-trade changes, natural disasters, or other crises. The current agreement states that, should this happen, "the Bank shall...detail what measures it has taken, or proposes to take, to ensure that the effects of such shocks on the inflation rate are transitory."

New Zealand has opted to target a CPI modified to exclude house-purchase and mortgage costs. Following the Iraqi invasion of Kuwait, the Bank announced that oil would also be removed from the targeted index.

New Zealand's effort represents a key element in a program designed to pull that country out of the economic stagnation of the decade following the mid-1970s, which was characterized by marginal growth in living standards, and virtually uninterrupted double-digit inflation. (Consumer price inflation was held to just over 7 percent in 1983 and 1984 by wage and price controls; it leapt to 17 percent in 1985 after they were removed.) The dual pressures of bringing inflation down and fiscal consolidation have taken a toll on the New Zealand economy. The latest projections by the Organisation for Economic Co-operation and Development call for an inflation rate of 3 percent, combined with real GDP growth of 2.4 percent, by 1992 — reflecting some optimism that the reforms will soon bear visible fruit.

A further pernicious aspect arises if households and businesses factor the short-term political temptation for easier policy into their expectations about future inflation — which is more likely the stronger this temptation has proved to be in the past. They then count on higher inflation, planning regular increases in prices and costs, and building an "inflation premium" into interest rates — thus causing the immediate economic and political costs of not responding to the desire for lower short-term interest rates to mount.

The way out of this vicious circle — whether the task at hand is preserving price stability or achieving it in the first place — is to set policy rules that are politically costly to break. One way of guaranteeing noninflationary policy would be to establish a central bank completely independent of the government of the day, with an explicit mandate to pursue price stability. Failing this, putting targets in place seems a promising alternative, provided that they can only be overridden by the elected government in a highly visible and potentially politically damaging way.

Experience with Targets

Other Countries

Formal price index targets have precedents in other countries. A particularly striking instance is that of Sweden, which from 1931 to 1937 targeted a stable *level* of the CPI.[5] A prominent recent example of targeting *increases* in the CPI is New Zealand's strategy since the passing of a new Reserve Bank of New Zealand Act in 1989, which specified that "The primary function of the Bank is to formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices." The current agreement between the Bank and the New Zealand government calls for CPI inflation of 0–2 percent — effective price stability — by December 1993 (see Box 1).[6] The idea of inflation targets is also alive — though not very lively — in the United States, where a resolution that would instruct the Federal Reserve "to eliminate inflation by no later than 5 years...and...then adopt and pursue mone-

Box 2: *The Neal Resolution in the United States*

In August 1989, the chairman of the House Banking Subcommittee on Domestic Monetary Policy, Stephen Neal, introduced a resolution to instruct the Federal Reserve to adopt a five-year, zero-inflation goal. The thrust of the resolution was welcomed by the Chairman of the Federal Reserve, Alan Greenspan, on the basis that price stability is an appropriate overriding goal for monetary policy and that explicit instructions might have a beneficial effect on inflation expectations. Greenspan cautioned, however, that the proposed course would involve temporarily slower economic growth, and he stressed the desirability of complementary policies in the form of smaller budget deficits, deregulation of domestic industries, and avoiding protectionism in international trade.*

The resolution was reintroduced to the current session of Congress in January 1991. At the moment, it is stuck in the subcommittee: in the midst of a recession, with the U.S. banking system looking distinctly shaky, its chances of passing are not very good. U.S. monetary policy has continued to ease since late 1989, despite the fact that consumer price inflation has been stubborn and currently stands at 4.9 percent, virtually unchanged from its rate at the time the resolution was first introduced.

*Statement by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System, before the Subcommittee on Domestic Monetary Policy of the Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, October 25, 1989.

tary policies to maintain price stability" has been introduced in the House of Representatives (see Box 2).[7]

"6 and 5" in Canada

Within recent memory, Canada underwent a rather different experiment: the "6 and 5" program of the early 1980s. Established in June 1982, this program was intended to ease the path to lower inflation — to 6 percent in 1983 and to 5 percent in 1984 — by limiting wage increases in the federal government and its enterprises, restricting the indexation of certain federal transfer programs and pensions (as well as the personal income tax), and controlling price increases in federally regulated sectors of the economy.

In fact, inflation came down even faster than envisaged in the program — CPI inflation was 5.8 percent in 1983 and 4.4 percent in 1984 — a decline readily explained in retrospect by the severe monetary squeeze of 1980–81 and the sharp economic contraction of 1981–82. Whether the program had much of an effect is debatable. The figures "6 and 5" may have helped to adjust expectations downward; the wage controls in the federal sector certainly made it easier for many provincial governments to establish wage restraints of their own.

Importantly, however, the "6 and 5" program was not comparable to the current initiative. It had major aspects of an incomes policy, and it expired after two years — pretty much the period of time it takes for monetary impulses to affect the inflation rate visibly — thus conveying little information to individuals and businesses about the likely path of monetary policy following its announcement. The February 1991 targets, however, specify an inflation trajectory extending to the middle of the decade and beyond, thus committing the Bank of Canada to continued disinflationary policy from now on in a way that the earlier program did not.

Why Target Inflation?

There are three major potential benefits from inflation targets: lower inflation expectations in the private sector; lower inflation expectations — and hence spending plans — in the nonfederal public sector; and enhanced accountability on the part of the federal government and the Bank of Canada for their performance on inflation.

Lowering Inflationary Expectations

In the Bank's words, the targets are intended "to encourage Canadians to base their economic decisions on this downward path for inflation so that the lower inflation will be more readily achieved."[8] Such a move recommended itself particularly in view of the possible boost to inflationary expectations from the impact of the goods and services tax (GST) in January 1991.

Most economists agree that inflationary expectations are potentially very important in determining how the economy will react to a change in monetary policy: the sooner individuals and businesses factor lower inflation into their spending, lending, and pricing decisions, the faster interest rates will drop and the less pain the transition to lower inflation will involve. But the ability of the announcement of targets to ease the transition depends on two related considerations.

First, it depends on how inflationary expectations are formed — whether individuals and businesses are primarily backward-looking, how much account they take of the current state of the economy and the stance of monetary policy, and whether their views on the motivations of policymakers have much influence (see Box 3). To the extent that expectations are dominated by recent experience, targets will provide little near-term benefit. Only a visible decline in inflation over the next two years will produce the shift in expectations necessary to ease the path from 1993 on.

Second, to the extent that individuals and businesses do take the motivations of policymakers into account, the nature of the announcement — both its political context and the way the targets are framed — becomes important. The February 1991 inflation targets clearly attempt to strike a balance between a downward trajectory for inflation sharp enough to indicate a strong commitment to eradicating it, and a trajectory — and a *de facto* band around the target — that is loose enough to appear achievable. Although skepticism regarding the whole exercise is widespread enough that the fine print of the post-1992 targets is not currently an issue, some early attention to the definition of the targets and their trajectory (as is discussed further below) may prove to be helpful in firming up the disinflationary psychology that early success in reducing CPI inflation should produce.

Conditioning the Behavior of other Levels of Government

Although not explicitly mentioned in the budget or in the documents put out by the Bank, a desire to change the spending intentions of provincial and local governments was probably a strong motivation for the publication of inflation targets. Program spending by nonfederal governments in Canada has increased by well over 50 percent since 1984, twice the rate of their federal counterpart and faster than the growth of GDP. The result has been a substantial increase in the tax burden on Canadians over and above that arising from the federal government's unhealthy fiscal situation.

If inflation is, say, 2 percent lower than expected, provincial-local spending plans that are laid in nominal dollars will produce a real provincial-local tax burden that is roughly 2 percent higher. By making the expected outcome of current monetary policy explicit, the minister of Finance and the governor of the Bank undoubtedly hope to reduce planned increases in nonfederal government spending to a rate well below that of the recent past.

In light of the provincial budgets for fiscal year 1991/92 introduced to date, the success of the strategy appears to have been incomplete. In Ontario, the province with the greatest economic weight and the most unrestrained spending in recent years, the targets appear to have had little impact on the economic projections, and very large real tax increases — both explicit and implicit in the deficit — have been scheduled in any event. Again, however, early success in reducing inflation may produce a different strategy in future budgets.

Box 3: *Targets and Inflation Expectations*

How do economic agents — households and businesses — form expectations about future inflation? A brief survey of this issue, highlighting three possible processes of expectation formation, shows its importance in determining how successful the announcement of targets will be in reducing them.

Economic agents as naive forecasters. First of all, inflation expectations may be primarily backward-looking. The simplest process would be one in which agents assume that the future rate of inflation will be similar to that during, say, the past three years. Alternatively, it may be the *trend* in the inflation rate that is extrapolated. It is difficult to be sure about this, but extrapolation does appear to play an important role in forecasting inflation. To the extent that this process dominates the formation of expectations, announcing targets will, in itself, have no effect — moderation of expectations will require visible evidence of declining inflation.

Economic agents as econometricians. A second potential channel for the formation of inflation expectations is observation of the state of the economy and the stance of monetary policy.* On the face of it, the solving of an economic model — in a more or less literal sense — incorporating the latest information on interest rates, money stock, output, employment, wages, and so on in Canada and abroad might not seem to leave room for targets to affect expectations. But among the general population, as among economists, there is substantial disagreement about the causes of inflation and the Bank of Canada's influence over it. Different observers will predict different rates of inflation from the same evidence. An explicit statement about the path of inflation expected by the Bank may cause some to re-examine their assumptions, and thereby arrive at a lower expectation about future inflation than they formerly held.

Economic agents as political scientists. This type of process can be elaborated to incorporate political as well as economic information. As mentioned earlier, the short-term balance of political costs and benefits attached to expansionary monetary policies tends to favor higher inflation — particularly when inflation is low at the outset. Accordingly, individuals and businesses might be expected to forecast inflation according to their view of how policymakers will react to this tradeoff. Under this scenario, targets may shift expectations downward, if agents reckon that targeting has raised the political embarrassment associated with expansionary policies. The key question is, therefore, whether the targets truly constitute an effective constraint on the government, a judgment that depends on the form the announcement takes, the specifics of the targets, and general assessments of the political climate.

*At the risk of making a somewhat artificial division, this type of expectations formation could be thought of as a limited form of the rational expectations process associated with the work of Thomas Sargent and Neil Wallace ("Rational Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule," *Journal of Political Economy* 83 [April 1975]). The full version, in which agents also incorporate the motivations of policymakers in their forecasts, is covered in the next paragraph.

Enhancing Accountability

Regardless of its motivation, the announcement of inflation targets provides one benefit that is important in a broader-than-economic sphere: the enhancement of the government's accountability. Aside from its implications for inflation expectations, this enhancement is, first and foremost, consistent with a key precept of parliamentary democracy.

The improvement in what might be termed "prospective" accountability is immediate: voters now have a clear statement of a central goal of Canadian macroeconomic policy and can make a more informed judgment about that goal. Down the road, the targets will improve "retrospective" accountability as well: by the end of 1993 — subject to some uncertainties related to the fine print — it should be possible to make a clear assessment of the Bank's performance on inflation.

This benefit should not be underestimated. Inflation has a pervasive influence on economic performance and powerful effects on the distribution of income and wealth — yet inflation, and the Bank's ultimate control over it, are debated in Parliament and in the press far less than economic initiatives of much

smaller importance. When monetary policy does come to the forefront of debate, the focus is almost entirely on its instruments — particularly week-to-week movements in short-term interest rates — rather than on its end result.

The establishment of inflation targets ought to raise the level of this debate. At the very least, it puts the onus more squarely on those who oppose the pursuit of price stability to be explicit about what inflation rate they would aim for — an issue that many of the Bank's critics are glad to sidestep.

The Fine Print: What Exactly Are We Aiming For?

Ability to affect expectations and enhance accountability depends, of course, on the targets' being comprehensible. On the face of it, the new inflation targets have the virtue of considerable clarity. They are framed in terms of a price index that is familiar, that is published regularly, and that is not subject to significant revisions.[9] And they are precise — down to the month — about the time frame in which specified rates of increase are to be reached. Inevitably, however, technical and operational difficulties forced a number of considerations to be attached to the targets.

Defining the Target

First, because of the potential for volatile food and energy prices to produce temporary deviations of the CPI from its underlying trend, the announcements made by the minister of Finance and the Bank stated that "for operational purposes" and "as a practical matter" the CPI excluding these components would be monitored as a guide for monetary policy.[10] This implies that the targets are, in fact, for the CPI excluding food and energy — or, to adopt a more concise phrase, the "core" CPI.

Second, increases in indirect taxes — mainly sales and excise taxes — can have a pronounced impact on the CPI, and the case for resisting this effect with monetary policy is far from clear-cut (see Box 4). An option to adjust the targets in the event of an impact from this source greater than one-half of a percentage point on the CPI has therefore been left open.[11]

The intention in both cases is to accommodate temporary jumps in the CPI as a result of commodity price movements and indirect tax changes, without allowing them to feed through into ongoing inflation. The Bank's discussion of deviations from the targets makes it clear that the outcome in one period has no significance for the targets in the next — for example, whether the year-over-year increase in the CPI for December 1992 is 2, 3, or 4 percent, the target for June 1994 will still be 2½ percent.

Finally, in recognition of the imprecise influence of monetary policy over inflation in the short term, a band of plus or minus 1 percentage point has been placed around the targets. The Bank has taken pains to emphasize that the targets are the mid-point (not the upper or lower bound) of this band.[12]

Quantifying the Qualifications

Each of these qualifications, taken individually, makes considerable sense: temporary price spikes in the commodity-sensitive food and energy areas are common but are unlikely to affect the long-term trend of total relative to core CPI inflation; there is no obvious reason why provincial sales tax hikes should prompt an immediate tightening of monetary policy when an increase in, say, income taxes does not; and the Bank's medium-term influence over inflation is imprecise. But taken together, they make the targets looser than first sight suggests.

The difference between the total and core CPI inflation rates, though less pronounced in recent years than during the volatile 1970s, has exceeded 1 percentage point on numerous occasions over the past decade — in fact, the year-over-year increase in the core CPI stood a full percentage point below that in the total CPI as recently as last December. From January 1981 to January 1991, a period when inflation aver-

Box 4: *Should the Bank of Canada Accommodate Indirect Tax Increases?*

In analyzing inflation and calibrating monetary policy, it is common practice to strip the influence of indirect tax changes on the price level out of the inflation rate as measured by, say, the CPI. In announcing that indirect tax increases adding more than one-half of a percentage point to the inflation rate may result in an equivalent raising of the relevant year's target band, the Bank of Canada is following this practice.

From the perspective of a central bank, the distinctive feature of indirect taxes is that they show up in retail prices immediately. The resulting rise in the general price level, other things equal, will bring about a proportional increase in demand for money. Failing to accommodate this increase would produce tighter monetary conditions and downward pressure on demand in the economy — which would not be justified, given the nonmarket nature of the price jump. This approach, however, needs to be qualified by two considerations.

First, indirect taxes are heterogeneous. The logic of accommodation does not apply to property taxes, for example: although they feed into the official CPI, they do not affect money demand in the same way that retail sales taxes do. Moreover, some definitions of indirect taxes are quite wide. Statistics Canada, for example, counts profits from provincial liquor boards as indirect taxes: some analysts would classify all remitted profits of government-owned businesses this way. Statistics Canada already publishes two different versions of the CPI excluding indirect taxes: an annual net price index based on input-output calculations and a quarterly version based on indirect tax flows in the quarterly national accounts. A third, excluding food and energy, is now needed. Who will calculate and publish it? It will be important to clarify whose measurement of inflation counts.

Questions like this point to a second consideration related to the Bank's credibility. Like contracts and transfer payments linked to the CPI, perceptions of inflation among consumers and specific groups — such as Japanese buyers of Canadian bonds — do not generally discriminate between different sources of price increases. If indirect tax increases are large and frequent, accommodating them fully will limit the decline in inflation expectations of backward-looking agents, and will damage the credibility of a central bank that continually announces success in hitting targets that are lower than "actual" inflation.

aged 6 percent annually, the mean absolute difference between the year-over-year increase in the total and the core CPIs was 0.6 of a percentage point. Data on the indirect tax component of the CPI do not go back as far and are not available for the core CPI, but, since 1986, indirect taxes appear to have raised average CPI inflation by as much as 0.5 percent annually (see Box 5).

These deviations are clearly not intended to be "stacked" on top of each other. But it is worth noting that — adding them together and allowing for the plus/minus 1 percentage point target band — a situation where the year-over-year increase in the total CPI exceeds the targeted figure by more than 2 percentage points, and yet the target is declared hit, is not inconceivable.

This example is not intended to cast doubt on the commitment on the part of the minister of Finance and the governor of the Bank to lower inflation. The recent stance of monetary policy is ample proof of that commitment, and there is good reason to think that the near-term targets can be hit reasonably cleanly. Over the longer term, however, when political considerations come more to the fore, the width of the *de facto* bands may raise questions about the Bank's ability to resist political pressure to "fine tune" the exercise — particularly if the 1992 target is achieved with room to spare.

Keeping the Promise

The assertion that surpassing the near-term target might endanger the longer-term targets may seem peculiar. But assessing the likelihood of achieving the targets in these two time frames involves very different considerations. The lags involved in the response of prices to monetary impulses mean that the course of inflation over the next two years is now largely determined; what is at issue is the strength of

Box 5: *Assessing the Price-Level Impact of Indirect Taxes*

In principle, ascertaining the impact of a tax change on prices ought to go beyond a straightforward "accounting-type" adding up of the *ad valorem* rate on each and every commodity and service. This approach generally embodies an assumption that all indirect taxes are passed on fully and immediately to the consumer. In actuality, depending on demand conditions and market structures, a greater or lesser amount of a tax will be absorbed by producers and distributors, in the form of lower wages or profits.

An assessment of the first-round impact of a tax change on prices ideally would reflect this sort of calculation; in practice, it is a highly imprecise and subjective exercise. But a decision by the Bank of Canada to accommodate the full impact of indirect tax increases calculated by the "accounting" approach might tip the scales in favor of full pass-through by promoting the illusion that indirect tax increases will be "paid" with newly printed money — thus increasing the actual impact of indirect tax increases on the CPI.

Recent provincial budgets have highlighted the fact that substantial indirect tax increases are likely to be a constant feature of Canadian economic life for years to come. It might, therefore, be better for the Bank of Canada to calibrate policy in advance to accommodate only a portion — say, two-thirds — of expected "accounting" increases.

the disinflationary impulse of recent Bank policy.[13] The credibility — and hence the effectiveness — of the longer-term targets is, on the other hand, more a political than an economic question.

Can It Be Done? The Outlook for 1991 and 1992

In assessing the credibility of the first target — 3 percent by the end of 1992 — it is essential to note that we are not going at it from a standing start. Monetary conditions in Canada turned restrictive in 1988 and continued to tighten through 1989. After an abortive easing early in 1990, the squeeze reached an acute level in April and May of that year. Bank borrowing by households and businesses ground to a halt and narrow money (M1) actually shrank through the first half of the year, hitting bottom in July.

Recent economic data are confirming that the economy was very weak at the beginning of 1991 — consistent with the usual six-to-nine month lag between monetary impulses and output. And prior to the GST-related jump in the CPI in January 1991, inflation was beginning to slow: after showing increases in the 6-percent range — a rate slightly exaggerated by the impact of indirect taxes — during the first three quarters of 1989, the core CPI went up on average by a little over 4 percent per quarter during 1990.

The slack that has opened up in the economy — real GDP is now about even with its level of two years ago — suggests that, even on the basis of quite pessimistic assessments of the tradeoff between growth and inflation, further declines in inflation are likely. For those inclined to accord special significance to the behavior of the monetary aggregates, the fact that M1 growth was negative through most of 1990, while M2 — after adjustment for distortions related to sizable net redemptions of Canada Savings Bonds — has been decelerating, reinforces the impression that the 1992 target may be surpassed.

Either approach to the data suggests that downward momentum sufficient to at least come close to the near-term targets has already been built into Canadian inflation. Hitting the 3 percent target in December 1992 does not require aborting the recovery with a renewed monetary tightening. A comparison of the current episode with the period surrounding the 1981–82 recession is presented in the appendix.

Will It Be Done? The Outlook for 1993 and Beyond

Speculation about the ultimate success of these targets brings us back to the issues of

credibility and inflation expectations raised earlier. Should Canadians plan on an inflation rate of less than 2 percent after mid-decade?

Yes

These targets certainly deserve to be taken seriously as a statement of macroeconomic policy. Their joint announcement by the minister of Finance and the governor of the Bank signals an important commonality of purpose. Aside from the time-inconsistency problem discussed earlier, the objective of price stability has been called into question in the past three years by projections in federal budgets that implied inflation in the 3 percent range forever — exactly the rate for the government to reap the maximum benefit from the 3 percent "indexation deductible" in the personal income tax and family allowance systems.[14] This discrepancy has now been eliminated.

Furthermore, the stakes have been raised: the political embarrassment associated with inflation will henceforth be greater. Reinforced by supporters of zero inflation in the media and elsewhere, examined in forums such as the House of Commons Standing Committee on Finance, and regularly referred to in the Bank's official commentary, these targets could become a key measure of economic performance — especially since the yardstick, the CPI, is more familiar and easily interpreted than key concepts in other areas, such as the debt-to-GDP ratio in fiscal policy.

No

Important reasons for skepticism nevertheless remain. Even if monetary policy were a precise tool, targets ultimately are only achievable if the elected government that set them has sufficient resolve. Political events, such as an election campaign at a time when the government's popularity is weak, or a change in government, might cause the embarrassment of abandoning the targets outright to appear relatively easy to bear. In this connection, the form the announcement of targets has taken

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William B.P. Robson, the author of this issue, is a Senior Policy Analyst at the C.D. Howe Institute, and Canadian Research Director of the Canadian-American Committee.

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Further information can be obtained by contacting: Barry A. Norris, Director of Publications, C.D. Howe Institute, 125 Adelaide Street East, Toronto, Ontario M5C 1L7 (tel.: 416-865-1904; fax: 416-865-1866).

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becomes an issue. Concern has been expressed that the fact of a joint Bank/Finance announcement may make it easier for a future minister of Finance to instruct the Bank to abandon its goal.[15] Such a reversal would be somewhat more difficult if the Bank had made an independent announcement, subsequently supported by the minister of Finance. It would be vastly more difficult if the Bank were to receive a new legislated mandate.

Moreover, monetary policy is *not* a precise tool. Lags between monetary policy actions and their impact on prices do tend to be long and variable. This fact, combined with the gradual trajectory of the path toward price stability after 1992 and the potential temptation for policymakers to make maximum use of the *de facto* band around the target index, raises additional concerns.

If, come December 1992, the net-of-tax core CPI is up less than 3 percent, it will be possible for advocates of easier policy to argue that the Bank should "make haste more slow-

ly" — even if the total CPI is running well above the net-of-tax core rate. (Some will urge that the plus/minus 1 percent band offers extra room as well.) The problem is that attempting to fine tune a slower decline in inflation is as likely to break the back of the downward trend — as happened in the early 1980s — as to slow it. This possibility becomes more likely during the 1993–95 period, when the decline in inflation is projected to slow to a rate of only one-third of a percentage point yearly.

Taking Targets Seriously: Some Final Observations

The announcement of inflation targets offers a number of potential benefits. To the extent that households and businesses take public pronouncements into account in forecasting inflation — and to the extent that they find the government's expressed intent credible — explicit targets should reduce the output and employment losses associated with disinflation. Any restraining impact that these targets have on nonfederal government behavior will pay sizable dividends in the form of a lower tax burden on Canadians through the 1990s. And the announcement is commendable because it raises the accountability of the minister of Finance and the governor of the Bank of Canada for a key outcome of macroeconomic policy: the rate of inflation.

In order to realize these benefits fully, however, it may be necessary to clarify the nature of the target index and the qualifications around it, to accelerate the approach to price stability if the December 1992 target is hit cleanly, and to solidify the federal government's support of the targets by committing it to complementary actions and, possibly, through revisions to the *Bank of Canada Act* as well.

Clarifying the Target Index

The rationale for using the CPI as the reference measure of inflation for the purpose of targeting was its familiarity and ready availability. For a number of reasons, however, the targets appear to have been set for a net-of-tax core index, a practice that raises two issues.

First, no such index is currently published. If high food and energy prices and indirect tax hikes cause total CPI inflation to be well above 3 percent in December 1992, an after-the-fact accounting of success in hitting the target will do little for the credibility of the exercise. The early construction and timely publication of an appropriate index — preferably by Statistics Canada rather than the Bank — would avoid this problem, and would be a step toward the use of a net-of-tax index for other purposes as well (see Box 6).

Constructing a new target index would also provide an opportunity to rethink the decision to exclude all food and energy. Excluding both these categories — which together amount to about one-quarter of the total CPI — reduces the relevance of the target index more than is necessary to guard against temporary supply shocks causing targets to be missed. Restaurant meals and electricity are not subject to such shocks. Why not exclude only oil and those food items for which this risk is particularly severe?

Second, the Bank and the federal government need to stress at every opportunity that it is the total CPI that is the ultimate target of policy, and that divergences between total CPI inflation and net-of-tax core inflation matter, since the Bank's monetary stance has to be calibrated to prevent shocks in food, energy, and indirect taxes from feeding into ongoing inflation.

In this connection, some recasting of the *de facto* target bands would be helpful to make it clear that the various qualifications are not additive percentage point for percentage point. Similarly, since indirect tax hikes at both the federal and provincial levels are likely to be a continuing fact of life for years to come, the Bank should also reconsider its implied strategy of fully accommodating all indirect tax increases that add more than one-half of a percentage point to CPI inflation.

Box 6: *The Virtues of Indexing to a Net Price Index*

Although the use of a net-of-tax price index for macroeconomic management is an innovation in Canada, there are precedents elsewhere. Elevating a net CPI to a key yardstick for economic policy clears the way for a potential fiscal reform of considerable importance: the indexing of government taxes and transfers — and potentially private contracts as well — to a net-of-tax index.

At present, certain groups in society are arbitrarily compensated for increases in certain types of taxes, such as sales, excise, and property taxes, by virtue of the fact that they are measured in the CPI; other types of taxes, quite properly, receive no such treatment. Other countries have addressed this problem. Denmark and the Netherlands, for example, index personal income taxes and private wages to net-of-tax indexes. The publication of a monthly, firm — that is, not subject to frequent revision — net-of-tax CPI by either the Bank of Canada or Statistics Canada would be a potential key step toward such a reform.

Accelerating the Approach to Price Stability after 1992

Even — or particularly — if the targets do turn out to be achievable in the short term, a further longer-term risk needs to be confronted. The more gradual trajectory of the projected reduction in inflation after 1992, which is clearly intended to affect expectations by looking "credibly" moderate, may end up having a perverse effect.

If inflation expectations are affected by past trends and initial progress on inflation leads individuals and businesses to take the pursuit of price stability more seriously, achieving 3 percent by December 1992 could potentially produce expectations of continued rapid progress toward zero. In that case, the less ambitious targets through to 1995 may act as a floor to expectations, stopping individuals and businesses from extrapolating the more rapid 1991–92 disinflation forward — and *increasing* the pain involved in getting to 2 percent by the end of 1995. In addition, the more gradual downward course will ensure that the Bank of Canada is subject to more intense periodic pressure for expansionary policy than it would otherwise be. Giving in, even briefly, has the potential to derail the whole process.

In the event that the 1992 target is exceeded, credibility — and accountability as well, as far as the professed pursuit of price stability is concerned — will be enormously enhanced if, rather than allowing an expansionary burst, the Bank accelerates the timetable for getting to the promised land of "clearly below 2 percent". Concern over credibility may make such a move seem ill-advised at present, but one change that could be made immediately is to remove the 1 percentage point lower band and recast the various targets as "X percent *or lower*". When the eventual goal is price stability, there is no particular virtue in putting symmetrical bands around the target figure.

What happens after 1995 is not a major issue at this point; indeed, if by 1996 year-over-year increases in the CPI are consistently below 2 percent, the influence of inflation expectations on economic decisionmaking will likely be negligible and the absence of a precise definition of price stability may not be very troubling. If an official definition appears necessary, however, it might be appropriate to formulate it in terms of the price level, rather than its rate of increase, in order to cement expectations more firmly. Although the existence of a small upward bias in the CPI complicates this approach, the difference between targeting increases and levels should not be very significant for the medium-term stance of monetary policy in a no-inflation environment, as long as the shocks that require some short-term accommodation are roughly symmetrical around zero.[16]

Reinforcing the Political Commitment to Inflation Control

Since monetary policy is not a precise tool, the risk that the targets will be missed despite the

best efforts of the Bank of Canada demands serious attention from federal government departments and agencies other than Finance and the Bank. Competition policy, changes in regulated prices, and trade barriers all have important impacts on consumer prices. It will be important for the government to show courage enough, in the event that a target appears likely to be missed, to take actions in other areas that can reinforce the disinflationary thrust of monetary policy.

This is true even in situations where it is the food, energy, and indirect tax components of the total CPI that are giving trouble. Despite its defects, the CPI is currently *the* measure of inflation of significance to most Canadians. Declaring victory on the basis of a specially constructed index will do less for accountability and credibility under such circumstances than, say, reforms to marketing boards to reduce the price of milk, eggs, or chickens to something approaching a free-market level.

A more radical — and enduring — way of reinforcing the support of the elected government for the Bank's battle against inflation would be an amendment to the *Bank of Canada Act* that gave clear primacy to the pursuit of price stability in the Bank's mandate.[17] Such a reform would do more to assuage lingering doubts about the federal government's long-term commitment to eradicating inflation than any number of speeches and budget statements by the minister of Finance.

It would also help to remove a growing suspicion — increased by the recent Ontario budget — that the Bank may be pushed off course by provincial profligacy. By increasing the level of short-term interest rates and the Canadian dollar that is consistent with a zero-inflation strategy, Ontario's fiscal policy will increase the political pressure on the Bank to abandon its goal. None of the benefits of inflation targets will be realized if there is any suspicion that it is the Treasurer of Ontario, rather than the governor of the Bank of Canada, who is setting Canadian monetary policy.

Aiming Low

Turning accelerating inflation around is painful, as Canadians are now all too aware. Under these circumstances, the announcement of inflation targets — signaling the path along which inflation is expected to decline, and indicating the Bank of Canada's commitment, with the full support of the federal government, to eradicating inflation — is welcome.

But the benefits of price stability — and the assurance that inflationary booms and disinflationary busts will not continue to disrupt Canadian economic life — can only ultimately be realized if the Bank is able to resist transitory political pressure for inflationary policies. Canadians who oppose inflation — pensioners and creditors particularly; those who value the economic and social benefits facilitated by stable money more generally — should take the opportunity to insist that the federal government and the Bank both do their part to build on the progress made thus far. By publishing inflation targets, the government and the Bank have rendered themselves accountable for their future performance: now they must be held to their promise.

Appendix: Anatomy of a Disinflation

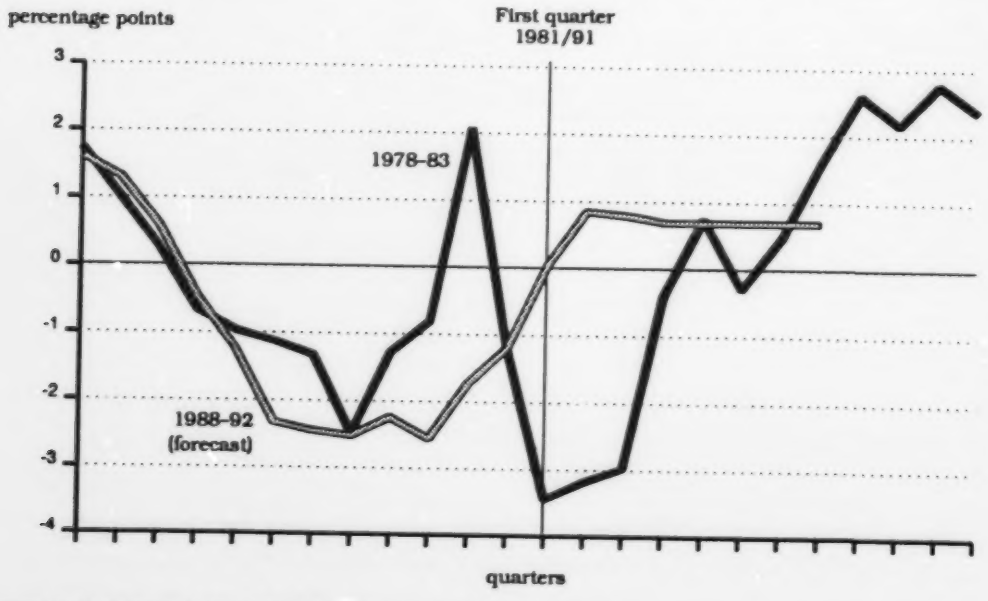
How likely is it that Canadian inflation will come down to 3 percent by the end of 1992? This *Commentary* has suggested that the disinflationary pressure created by the Bank of Canada's stance over the past three years is probably sufficient to achieve this goal — perhaps even to exceed it.

This assessment rests, as such judgments inevitably will, on a sense of the magnitude of the recent monetary squeeze relative to that of past disinflationary episodes. The obvious comparison is with the disinflation of the early 1980s, which ultimately brought CPI inflation down by 9 percentage points in the space of three years. The disinflationary squeeze that began in 1988 is now sufficiently far advanced that it is possible to make some instructive comparisons with Canada's experience of a decade ago.

This appendix presents a series of figures comparing the current episode with the last one. Each figure shows quarterly observations, over a six-year span, of a key economic indicator, starting with monetary conditions, moving through indicators of economic growth and employment, and finishing with changes in CPI inflation.

The figures are synchronized so that a key turning point in the stance of monetary policy — the inversion of the yield spread between long- and short-term interest rates — is superimposed. As it happens, the initial inversion of the yield spread during the earlier episode, in the third quarter of 1978, preceded the inversion of the spread at the beginning of the current episode by exactly ten years. Accordingly, the figures superimpose series exactly one decade apart: in each case, the dark line

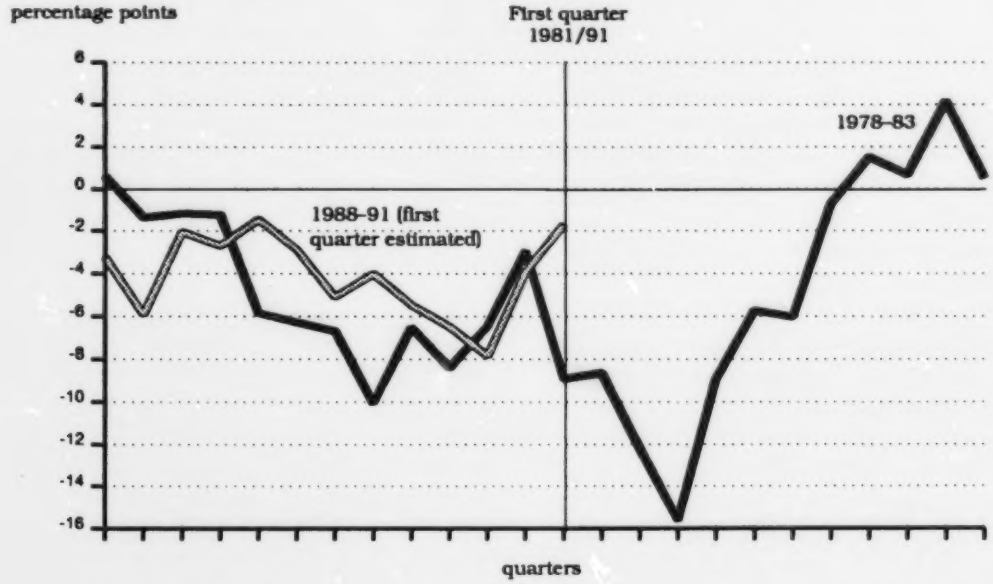
Figure A1: ***The Yield Spread***
(ten-year-plus government bond yields minus three-month treasury bill yields)



Sources: Bank of Canada; Department of Finance, budget projections.

Figure A2: ***The M1 Gap***

(year-over-year growth of M1 minus year-over-year growth of nominal GDP)



Sources: C.D. Howe Institute calculations, based on data from the Bank of Canada; Statistics Canada.

represents the experience from the first quarter of 1978 to the last quarter of 1983; the lighter line represents the period starting in the first quarter of 1988, with forecasts from the February budget added where possible. The impression left by a comparison of the two episodes is that the recent monetary squeeze — while less severe than its decade-earlier counterpart — has likely been severe enough to bring the (*ex*-GST) inflation rate down by 2 percentage points by the end of 1992.

The yield spread, a key indicator of monetary conditions, is a logical place to start the comparison. Figure A1 shows the spread between long government bonds and three-month treasury bills (data after the first quarter of 1991 are budget forecasts). In both cases, the first 18 months of tight monetary policy produced a comparable shift in the spread, with the difference between long and short rates moving from its normal positive position down to a negative gap of about 2 percentage points. In the earlier episode, this tight stance was temporarily reversed as Canada followed a U.S.-led burst of easier money inspired by the second oil shock and fears of recession. When the U.S. Federal Reserve under Paul Volcker reverted to a non-accommodative policy in late 1980, however, pressure on the exchange rate — intensified by capital outflows related to the National Energy Program — forced the Bank of Canada into an acutely contractionary stance, signaled by short rates that were more than 3 percentage points above long rates. Nothing of this sort seems remotely likely today. A rough-and-ready comparison of the length and depth of the inverted yield spreads during the two episodes suggests that the current squeeze is of the order of two thirds the intensity of the earlier one.

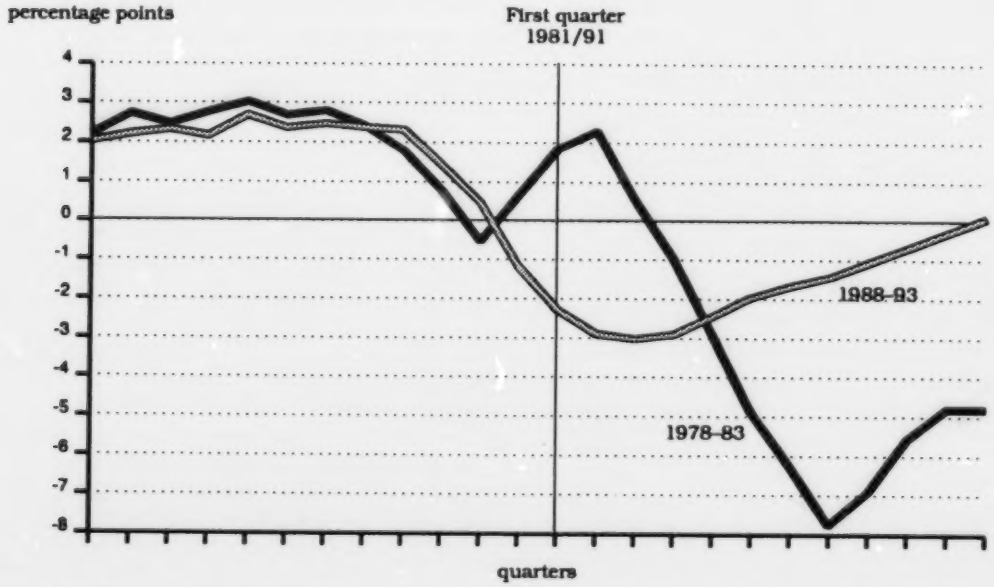
Figure A2 shows the behavior of another useful indicator of monetary conditions during these two episodes: the gap between growth of M1 and growth of nominal GDP.[1] In both episodes, the growth of a negative M1 gap as the yield curve inverted indicates an unwillingness on the part of the Bank to accommodate the momentum of spending in the economy

with a matching supply of liquid money. The divergent trends following the initial squeeze are also evident in this figure: in the earlier episode, the more accommodative stance in 1980 was followed by a severe crunch — which, given the downward shift in M1 demand in the early 1980s, is somewhat exaggerated in the figure — over the next year and a half. No similar event is in the offing this time — the Bank states, in fact, that M1 growth during 1991 is expected to be well above recent rates.[2] In the presence of much slower nominal GDP growth, this suggests that the M1 gap will remain close to zero over the next year. A comparison of the relative sizes of the M1 gaps opened up in the two disinflations suggests that the current squeeze is of approximately half the intensity of its cousin a decade ago.

Figure A3 shows the pattern of output, in the form of deviations of real GDP from its trend growth rate, that resulted from these monetary impulses.[3] In both cases, the initial monetary restraint brought growth back to trend two years after the yield curve first inverted. In the earlier episode, however, the initial slide was followed by a rebound, as the economy responded to the easier money of 1980 and a oil-related boost in the terms of trade. The subsequent acute monetary tightening was followed by a severe collapse in 1981–82 — a vivid example of a failed effort to fine tune growth with monetary policy. In the absence of reversals of this sort this time round, output has continued to dip below trend. If it rebounds during this year, as forecast in the budget and prefigured in the yield spread and the M1 gap, the net pattern of above- and below-trend output again suggests that the current episode is of roughly half the magnitude of that experienced a decade ago.

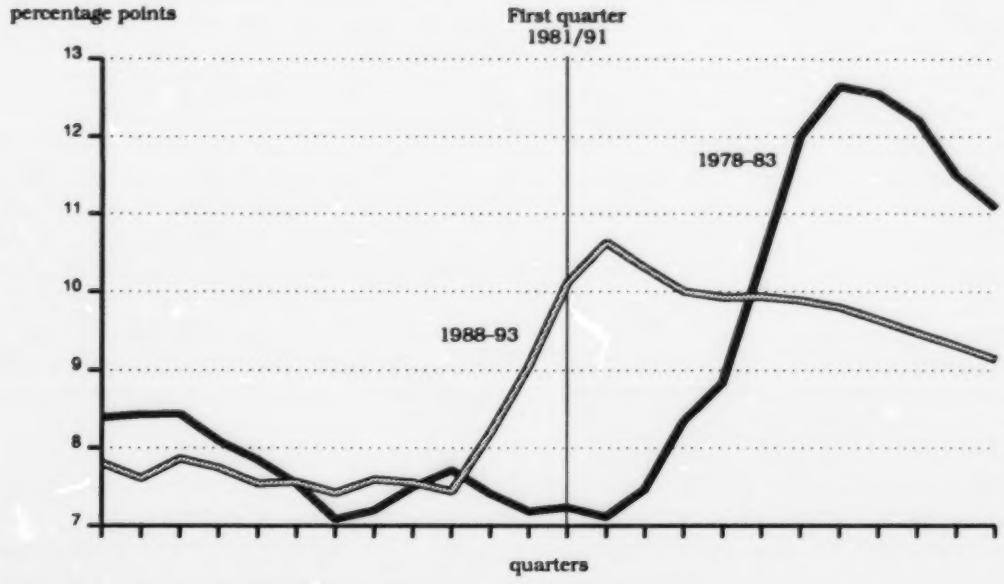
Figure A4 shows historical and recent/projected trends in the unemployment rate. Given the fact that the unemployment rate reached 10.5 percent in March, the budget projections in this case may need to be taken with a grain of salt. Nevertheless, allowing for a somewhat worse unemployment performance than expected, a comparison of the gap

Figure A3: ***Real GDP: Deviations from Trend Growth***
(GDP in 1986 dollars relative to 1976–95 trend)



Sources: C.D. Howe Institute calculations, based on data from Statistics Canada; Department of Finance.

Figure A4: ***The Unemployment Rate***



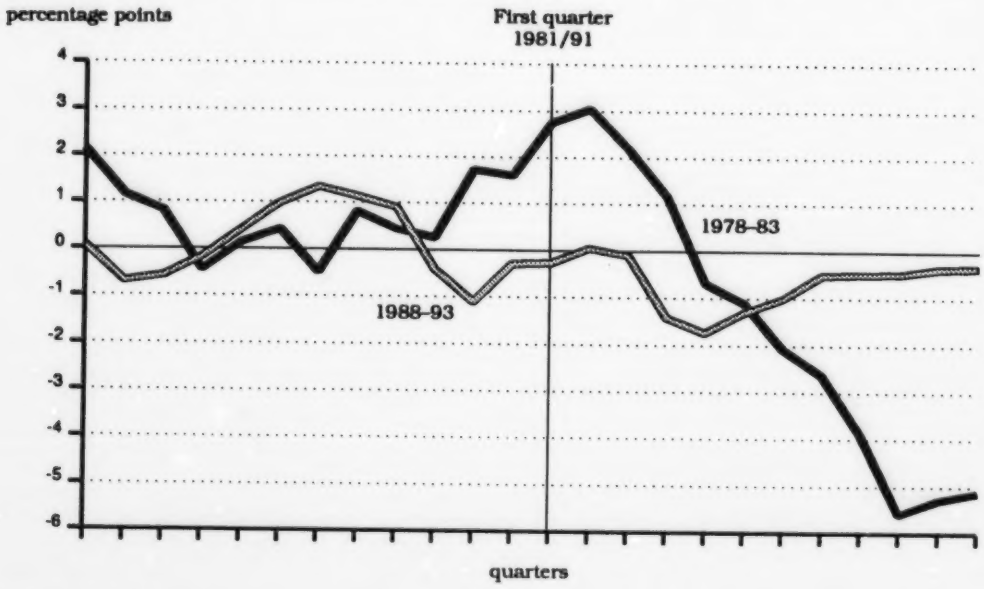
Sources: Statistics Canada; Department of Finance budget projections.

between the unemployment rate and, say, a base level of 8 percent again suggests disinflationary pressure perhaps half as strong as that exerted in the earlier episode.

The different patterns of monetary shocks and output in the two episodes, the delayed reaction of inflation to these events, and the marked impact of the second oil shock on inflation in the 1980–82 period, all complicate a comparison of changes in inflation from 1978 to 1983 with those from 1988 forward. Figure A5 shows year-to-year *changes* in CPI inflation, removing the impact of the GST from the budget projections for 1991. The striking feature of the earlier episode is that, although the monetary expansion, brief rebound in the economy, and oil price shock did cause inflation to continue accelerating into 1981, the collapse after that year was dramatic: CPI inflation fell more than 5 percentage points in 1983. By the end of 1984 — and despite energy price increases that continued to exceed 6 percent — the year-over-year increase in the CPI was 3.8 percent, down almost 9 percentage points from its peak in the fall of 1981. In the current episode, inflation had already started to turn down by mid-1990. The February targets anticipate a continued deceleration over the next two years, which is nowhere near as dramatic as the one that occurred from 1982 to 1984.

History is a far-from-infallible guide. Yet a comparison of the current disinflation with that of a decade earlier suggests that the monetary squeeze Canadians have experienced since late 1988 has been about one-half as severe as the one that lowered inflation by about 9 percentage points in three years. Even allowing, as some analysts do, for greater resistance in the inflation rate as it gets lower, this examination suggests that Canada is quite likely to see a CPI inflation rate of 3 percent by December of 1993, without much additional downward pressure from the Bank of Canada.

Figure A5: ***Change in the CPI Inflation Rate***
(change in year-over-year CPI increase from year earlier)



Sources: Statistics Canada; Department of Finance budget projections.

Notes to Text

1 Bank of Canada, "Targets for Reducing Inflation" (press release, February 26, 1991, reprinted in *Bank of Canada Review*, March 1991), p. 5.

2 While evidence on this point is mixed, some studies of Canada have estimated the adverse impact of inflation on economic growth to be very large. Farid Novin (*The Productivity-Inflation Nexus Revisited: Canada, 1969-1988*, Working Paper 91-1 [Ottawa: Bank of Canada, 1991]) estimates that every 1 percentage point increase in inflation lowers total factor productivity growth by 0.3 percent. Even a far more restrictive set of assumptions — that inflation affects the productivity of capital only and that the *level*, not the growth rate, is affected — yields a discounted value of the output gain resulting from 1 percentage point lower inflation that is larger than current GDP! See Peter Howitt, "Zero Inflation as a Long-Term Target for Monetary Policy," in Richard G. Lipsey, ed., *Zero Inflation: The Goal of Price Stability* (Toronto: C.D. Howe Institute, 1990), p. 106.

3 Canada's own recent experience provides a lesson in the dangers of aiming for several monetary policy targets at once. Efforts to fine tune the economy and the dollar through 1986 and early 1987 slowed the Bank of Canada's reaction to surging money growth, exacerbating the overheating economy and rising inflation of 1987-89 and, ultimately, contributing to the present crunch. See William B.P. Robson, *Not-So-Fine Tuning: Bank of Canada Policy and Inflation Since 1986*, Inflation Monitor 5 (Toronto: C.D. Howe Institute, 1990).

4 The problem of time inconsistency in monetary policy was first formally explored in Finn Kydland and Edward Prescott, "Rules Rather than Discretion: The Inconsistency of Optimal Plans," *Journal of Political Economy* 85 (June 1977). For a recent survey of this issue, see A. Steven Englander, "Optimal Monetary Policy Design: Rules versus Discretion Again," *Federal Reserve Bank of New York Quarterly Review* (Winter 1991), especially pp. 67-69.

5 For an account, see Susan Black and William T. Gavin, "Price Stability and the Swedish Monetary Experiment," *Economic Commentary* (Federal Reserve Bank of Cleveland), December 15, 1990. It is worth emphasizing that targeting a stable level of a price index means that, over time, the inflation rate as measured by that index will average exactly zero.

6 The relevant section of the Reserve Bank Act and the latest *Reserve Bank of New Zealand Policy Targets Agreement* are reprinted in Reserve Bank of New Zealand, *Monetary Policy Statement, February 1991*, pp. 2, 37-38.

7 United States, Congress, House of Representatives, H.J. Resolution 24, January 3, 1991.

8 Bank of Canada, "Targets for Reducing Inflation," p. 6.

9 The virtues of familiarity and timely publication favor the use of a price index like the CPI over a more

theoretically satisfying target, nominal GDP. Nominal GDP is not a concept that resonates well in the minds of most Canadians and to the extent that it is understood, a policy of targeting it may be interpreted — unfavorably — as a kind of incomes policy.

10 Bank of Canada, "Background Note on Inflation Targets" (reprinted in *Bank of Canada Review*, March 1991), p. 12; and Michael Wilson, *The Budget* (Ottawa: Department of Finance, 1991), p. 114.

11 Bank of Canada, "Background Note," p. 14.

12 Ibid., p. 6.

13 Space does not permit a full examination here of the transmission of monetary impulses to output and inflation in Canada. For a detailed exploration, see David E.W. Laidler and William B.P. Robson, *Mainly Money: The Cause of Canadian Inflation*, Inflation Monitor 4 (Toronto: C.D. Howe Institute, 1990); Laidler and Robson, in *Money Talks — Let's Listen!*, C.D. Howe Institute Commentary 26 (Toronto: C.D. Howe Institute, 1990), draw out the implications of recent Bank actions for output and inflation over the next two years.

14 See David R. Johnson, "An Evaluation of the Bank of Canada Zero Inflation Target: Do Michael Wilson and John Crow Agree?" *Canadian Public Policy* 16 (September 1990).

15 David E.W. Laidler, "Qualms about Targets" (paper presented at the John Deutsch Policy Forum on the Federal Budget, Queen's University, Kingston, Ont., April 12, 1991).

16 On the CPI's upward bias, see Pierre Fortin, "Do We Measure Inflation Correctly?" in Lipsey, ed., *Zero Inflation*. William T. Gavin and Alan C. Stockman argue that targeting a price index level may be a more effective check on policymakers' bias toward inflation ("Why a Rule for Stable Prices May Dominate a Rule for Zero Inflation," *Federal Reserve Bank of Cleveland Economic Review*, first quarter 1991).

17 A reform along these lines, in the context of a reconstituted Canadian union, is proposed in David E.W. Laidler, *How Shall We Govern the Governor?: A Critique of the Governance of the Bank of Canada*, The Canada Round 1 (Toronto: C.D. Howe Institute, 1991).

Notes to Appendix

1 This relationship can be thought of as measuring the difference between supply of M1 and demand for it, as proxied by GDP. See Laidler and Robson, *Mainly Money*, pp. 8–10.

2 Bank of Canada, "Background Note," p. 8.

3 The trend is an ordinary least squares fit on real (1986 dollars) GDP during the 20 years from the first quarter of 1976 to the fourth quarter of 1995 (as projected in the February 1991 budget). During this period, the trend growth rate of real GDP is 3 percent annually.